

**WHAT IS CLAIMED IS:**

1 1. A hydraulic control system for an automatic transmission,  
2 comprising:

3 a hydraulic pressure source operative to discharge a  
4 hydraulic oil amount;

5 a flow rate control valve disposed on a discharge side  
6 of the hydraulic pressure source, the flow rate control  
7 valve including a displaceable spool formed with an orifice  
8 and a drain hole, the drain hole having a communication area  
9 which is fluidly communicated with an outside of the flow  
10 rate control valve and varied during displacement of the  
11 spool, the spool having a large stroke position where the  
12 communication area is not less than a first predetermined  
13 area, and a small stroke position where the communication  
14 area is not more than a second predetermined area, the flow  
15 rate control valve being operative to control a flow rate of  
16 the hydraulic oil amount passing through the orifice by  
17 regulating the hydraulic oil amount drained from the  
18 communication area depending on displacement of the spool;

19 stroke position determining means for determining that  
20 the spool is displaced from the large stroke position to the  
21 small stroke position; and

22 pressure regulator means for regulating a hydraulic oil  
23 pressure downstream of the orifice, the pressure regulator  
24 means correcting the hydraulic oil pressure downstream of  
25 the orifice by adding a predetermined correction amount of  
26 hydraulic pressure for a first predetermined time when the  
27 stroke position determining means determines that the spool  
28 is displaced from the large stroke position to the small  
29 stroke position.

1 2. The hydraulic control system as claimed in claim 1,  
2 further comprising a driving source coupled to the hydraulic

3 pressure source and rotatable to drive the hydraulic  
4 pressure source, the first predetermined area being a  
5 communication area of the drain hole which is communicated  
6 with the outside of the flow rate control valve when the  
7 rotational speed of the driving source is a first speed, the  
8 second predetermined area being a communication area of the  
9 drain hole which is communicated with the outside of the  
10 flow rate control valve when the rotational speed of the  
11 driving source is a second speed.

1 3. The hydraulic control system as claimed in claim 1,  
2 further comprising a driving source coupled to the hydraulic  
3 pressure source and rotatable to drive the hydraulic  
4 pressure source, the stroke position determining means  
5 determining that the spool is displaced from the large  
6 stroke position to the small stroke position when a  
7 rotational speed of the driving source is decreased from a  
8 first speed to a second speed for a second predetermined  
9 time.

1 4. The hydraulic control system as claimed in claim 3,  
2 wherein the first speed is set higher as the hydraulic  
3 pressure downstream of the orifice increases.

1 5. The hydraulic control system as claimed in claim 3,  
2 wherein the second speed is set higher as the hydraulic  
3 pressure downstream of the orifice increases.

1 6. The hydraulic control system as claimed in claim 1,  
2 wherein the first predetermined time is set longer as a  
3 temperature of the hydraulic oil decreases.

1 7. The hydraulic control system as claimed in claim 1,  
2 wherein the predetermined correction amount is set larger as  
3 a temperature of the hydraulic oil decreases.

1 8. A method for hydraulically controlling an automatic  
2 transmission supplied with a hydraulic oil amount discharged  
3 by a hydraulic pressure source driven by a driving source,  
4 the hydraulic oil amount discharged being controlled by a  
5 flow rate control valve including a displaceable spool with  
6 an orifice, the method comprising:  
7 determining whether a driving source speed is not less  
8 than a first speed;  
9 determining whether the driving source speed is not  
10 more than a second speed;  
11 determining whether a first predetermined time has  
12 elapsed when it is determined that the driving source speed  
13 is less than the first speed and that the driving source  
14 speed is not more than the second speed; and  
15 correcting a hydraulic oil pressure downstream of the  
16 orifice of the flow rate control valve by adding a  
17 predetermined correction amount of hydraulic pressure when  
18 it is determined that the first predetermined time has not  
19 elapsed.

1 9. The method as claimed in claim 8, further comprising  
2 reducing the predetermined correction amount when it is  
3 determined that the first predetermined time has elapsed.

1 10. The method as claimed in claim 9, further comprising  
2 determining whether the predetermined correction amount is  
3 zero.

1 11. The method as claimed in claim 10, wherein the  
2 correcting operation is terminated when it is determined  
3 that the predetermined correction amount is zero.

1 12. The method as claimed in claim 8, further comprising  
2 counting a second predetermined time when it is determined  
3 that the driving source speed is not less than the first  
4 speed.

1 13. The method as claimed in claim 12, further comprising  
2 reducing the second predetermined time as the driving source  
3 speed decreases when it is determined that the driving  
4 source speed is less than the first speed.

1 14. The method as claimed in claim 12, wherein the counting  
2 operation of a second predetermined time is started  
3 following a standby period for which the driving source  
4 speed becomes not less than the first speed and decreases to  
5 reach the first speed again.

1 15. The method as claimed in claim 8, wherein the first  
2 speed is set higher as the hydraulic pressure downstream of  
3 the orifice increases.

1 16. The method as claimed in claim 8, wherein the second  
2 speed is set higher as the hydraulic pressure downstream of  
3 the orifice increases.

1 17. The method as claimed in claim 8, wherein the second  
2 predetermined time is set longer as a temperature of the  
3 hydraulic oil decreases.

- 1 18. The method as claimed in claim 8, wherein the
- 2 predetermined correction amount is set larger as a
- 3 temperature of the hydraulic oil decreases.